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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/705,541

11/11/2003

Andrew P. Harbach

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STEFAN V. CHMIELEWSKI
DELPHI TECHNOLOGIES, INC.
Legal Staff MC CT10C
P.O. Box 9005
Kokomo, IN 46904-9005

EXAMINER

HUNG, YUBIN

ART UNIT	PAPER NUMBER
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2624

MAIL DATE	DELIVERY MODE.
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06/21/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/705,541

Applicant(s)

HARBACH ET AL.

Examiner

Yubin Hung

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/11/03.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:
 - P. 10, paragraph 38, lines 2-3: per Fig. 6, ref. 32 at step 80 it should be bank 1 (32A-32C) of the first light source 32 that is turned off

Appropriate correction is required.

Drawings

2. The drawings are objected to because in Fig. 7, block 80 "BANK 2" should have been "BANK 1". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date

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of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Double Patenting

3. Applicant is advised that should claim 11 be found allowable, claim 9 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140

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F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

5. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claim 1, 6, 8, 9, 11 and 16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2, 3, 8-10 and 13-20 of copending Application No. 10/974,282 in view of Haven et al. (US 2004/0170304).

Claim Correspondence

<u>This application</u>	<u>10/974,282</u>
1	2
6	8
8	2
9	3
11	10
16	15
18	10

7. Regarding claim 1, and similarly claims 8, 9, 11 and 18, of the instance application, claim 2 (and respectively, claims 3 and 10) of the '282 application discloses all its limitations except for the ranges of the two angles formed by the two light sources and the imaging axis. However, the ranges are made obvious by Haven. See the 35 U.S.C. 103 rejections of claims 1, 9, 11 and 18 below.

This is a provisional obviousness-type double patenting rejection.

8. Regarding claim 6, and similarly claim 16, of the instance application, claim 8 (and respectively, claim 15) of the '282 application further discloses turning one of the two lights on and off (since only one is turned on at a time).

This is a provisional obviousness-type double patenting rejection.

9. Claims 2, 3, 12 and 13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 6, 7, 13 and 14 of

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copending Application No. 10/974,282 in view of Haven et al. (US 2004/0170304) as applied above, and further in view of Roth (US 2005/0030519).

Claim Correspondence

<u>This application</u>	<u>10/974,282</u>
2	6
3	7
12	13
13	14

10. Regarding claims 2 and 3, and similarly claims 12 and 13, of the instance application, claim 6 (and respectively, claims 7, 13 and 14) of the '282 application discloses all its limitations except for arranging the LEDs substantially in a line.

However, this limitation is taught by Roth. See the 35 U.S.C. 103 rejections of claims 2, 3, 12 and 13 below.

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 4-11, 14-21, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haven et al. (US 2004/0170304).

13. Regarding claim 11, and similarly claims 1, 9, 20 and 23, Haven discloses a vehicle eye monitoring system for monitoring an eye of a person in a vehicle, said system comprising:

- a video imaging camera located on a vehicle and oriented to generate images of an eye of a person in the vehicle, wherein the camera is aligned along an imaging axis
[Fig. 1, ref. 101 (imaging camera) & 107 (axis); PP. 8-9, paragraph 106 (deploying the monitoring system in a vehicle)]
- a first light source located on the vehicle and arranged at an angle less than θ_1 degrees from the imaging axis for illuminating the eye
[Fig. 1, refs. 103 (1st light source) & 110 (angle); Fig. 2A (bright pupil); P. 3, paragraph 33. Note that $\theta_1 = 3$ is disclosed]
- a second light source located on the vehicle and arranged at an angle greater than θ_2 degrees from the imaging axis for illuminating the eye
[Fig. 1, refs. 105 (2nd light source) & 112 (angle); Fig. 2B (dark pupil); P. 3, paragraph 34. Note that $\theta_2 = 3$ is disclosed]
- a processor for processing the images generated with the video imaging camera during illumination of the eye with the first light source, and during illumination of the eye with the second light source
[Fig. 1; Fig. 2C (difference image); Fig. 15, refs. 840-870 (processing the images); P. 2, paragraph 31 (using a processor); P. 11, paragraphs 143-145]

Haven does not disclose expressly the target limitation of the (first) angle between the first light source and the axis being less than $\theta_1 = 2.5$ degrees and of the (second) angle between the second light source and the axis being greater than $\theta_2 = 4.5$ degrees. (Haven discloses $\theta_1 = \theta_2 = 3$ and that the second angle is also less than 15 degrees, see paragraphs 33 & 34).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply target limitation. Applicant has not disclosed that target limitation provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with either the ranges of the first and the second angles taught by Haven or the claimed target limitation because both perform the same function of obtaining a bright pupil image and a dark pupil image that can subsequently be processed to detect the drowsiness of a driver.

Therefore, it would have been obvious to one of ordinary skill in this art to modify Haven with target limitation to obtain the invention as specified in claim 11.

14. Regarding claims 4 and 14, note that Haven further discloses that the first and the second light sources are substantially coaxial and non-coaxial for bright and dark pupil images capture, respectively [Fig. 1, refs. 103 (1st light source), 105 (2nd light source) and 107 (imaging axis); Figs. 2A & 2B; paragraphs 35 (especially lines 1-3), 37 and 38].

15. Regarding claims 5, 15, Haven further discloses capturing a first image and then a second image when the first light and the second light are illuminated, respectively [Fig. 1, refs. 103 & 105; Fig. 15, refs. 810 and 820].

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16. Regarding claims 6 and 16, Haven further discloses turning at least one of the first light and the second light on and off [Fig. 1, refs. 103 & 105; Fig. 15, refs. 810 and 820].

17. Regarding claims 7 and 17, Haven further discloses the use of a CMOS detector [P. 8, paragraph 91, last 4 lines].

18. Claims 8 and 18 recite different ranges for the angles formed between the first (respectively, the second) light source with the imaging axis and are similarly analyzed and rejected as per the analysis of claim 11 above.

19. Regarding claim 19, and similarly claims 10 and 24, Haven further discloses

- wherein the first light source and second light source generate light illumination at substantially the same frequency [Fig. 1, refs. 103 & 105; P. 4, paragraph 50, lines 3-5]

20. Regarding claim 21, Haven further discloses

- further comprising the step of turning off the first light source when the second light source is illuminated, and turning off the second light source when the first light source is illuminated [Fig. 1, refs. 103 & 105; Fig. 15, refs. 810 & 820; P. 4, paragraph 50]

21. Claims 2, 3, 12, 13 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haven et al. (US 2004/0170304) as applied to claims 1, 4-11, 14-21, 23 and 24, and further in view of Roth (US 2005/0030519).

Regarding claims 12 and 13, and similarly claims 2, 3 and 22, Haven discloses all limitations of their parent, claim 11.

Haven does not expressly disclose that both the first (claim 12) and the second (claim 13) light sources comprise a first plurality of light emitting diodes arranged substantially in a line. However, Roth, which is combinable with Haven because both have aspects that are form the same field of endeavor of image acquisition, teaches using a linear array of LEDs as a light source [Refs. 14-18 of Figs. 2 & 3; P. 5, paragraph 48, lines 1-7]. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Haven with the teachings of Roth as recited above in order to improve the signal-to-noise ratio of the illumination as well as to reduce the complexity and cost, as Roth indicates in P. 1, paragraph 10.

Conclusion and Contact Information

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

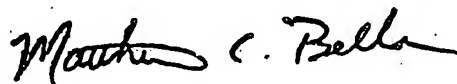
- Oda (US 6,542,624) – discloses using 2 sets of light sources for iris identification [Fig. 1, refs. 11 & 12]

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- Fujimura et al. (US 7,206,435) – discloses on-axis and off-axis illumination using LEDs arranged as rings for eye tracking [Figs. 1A & 4]

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yubin Hung whose telephone number is (571) 272-7451. The examiner can normally be reached on 7:30 - 4:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C. Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

24. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Yubin Hung
Patent Examiner
Art Unit 2624
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